

# **NASPI Control Room Solutions Task Team Monthly Meeting**

**Presenters: Mike Cassiadoro & Jim Kleitsch  
June 20, 2018**



# Agenda

- I. Introductions
- II. Review meeting minutes from May 2018 Call.
- III. NDR Update on Determining Disturbance Location Focus Area Document
- IV. Fall 2018 NASPI Meeting
- V. Recurring request for
  - Focus Area Documents
  - Video Event Data
  - Use Case Document Ideas
- VI. Adjourn

# CRSTT Meeting Minutes – May 2018

Team to review meeting minutes from May 2018 call.

## Action Items

- **Teresa:** setup test skype meeting with Jim Kleitsch.
- **Teresa:** to post the *CRSTT work plan* document on the CRSTT webpage under the mission statement.
- **NDR and Mike** will take another look at updating the Phase Angle Monitoring spreadsheet and possibly update the paper in an effort to keep the CRSTT documents current. ([Download](#) the paper).
- **NDR** to check with Peak on sharing an event video – in progress.
- **Tom** will reach out to Allen Goldstein (NIST) for possible coordination.
- **Mahendra** will reach out to the PRSVTT on task team collaboration.
- **All:** Mike is looking for people willing to serve on a panel at the Oct. 2018 NASPI WG mtg. in Philly to discuss specific uses of synchrophasor technology in the control room (e.g., enhanced state estimation, oscillation detection, etc.). If you are interested, please let Mike know.
- Use Case Document spreadsheet ([Download](#)).

# CRSTT Meeting Minutes – May 2018

## cont'd

### Meeting Notes

- [Download](#) the NASPI Work Group meeting presentations.
- Reviewed the agenda from the ABQ CRSTT breakout session. Main takeaway, discuss opportunities for CRSTT to coordinate with other industry bodies. Next CRSTT breakout session will be more of a working session.
- Focus area documents; in progress Determine Disturbance Locations survey responses were due April 30, 2018. NDR will provide an update on the paper on next month's CRSTT call. Thank you to all of those who have responded to the survey. The goal would be to present the paper during the fall NASPI Work Group meeting in Philly.
- Video event files will still be maintained. If you would like to share an event please contact either Mike, Jim, or Teresa for assistance.
- Mike is looking for people willing to serve on a panel for synchrophasor use in the control room at the next NASPI Work Group in Philly. If you are interested, please let Mike know.
  - Need: standard synchrophasor data set(s) that is accessible to users to run through their oscillation detection tools. Useful in comparing different systems, robustness, algorithms, etc.
  - Who is doing enhanced state estimation and yes, it is in front of our control operators?
  - Should we coordinate with another task team (e.g. PRSVTT)?

# CRSTT Meeting Minutes – May 2018

## cont'd

### CRSTT Goals

- Develop a series of use case summary docs that define how grid operators and electric utilities are using synchrophasor data to provide operational value.
- Prioritize and complete the remaining focus area documents.
- Create additional video event files for use cases and simulated events.
- Gather operator feedback on synchrophasor applications (best practices).
- Support the development of synchrophasor-related training for operations staff.
- Develop a series of Lessons Learned documents related to the use of synchrophasor technology in the operations environment.

# Fall 2018 NASPI Meeting

- ❑ Next NASPI meeting scheduled the week of October 22<sup>nd</sup> in Philadelphia Area
- ❑ NECR SMS Meeting being held in the area (PJM?) just after the NASPI meeting
- ❑ Potential Panel Session On The Use of Synchrophasor Technology in the Control Room during CRSTT breakout session at Fall Meeting (Enhanced State Estimation with PRSVTT a potential topic)

# Focus Area Documents

## **Determining Disturbance Locations (Nuthalapati –Peak)**

- Survey distributed to industry by NDR.
- Collecting responses now.
- Hope to have summary ready for next CRSTT meeting
- Present final version at Fall meeting?

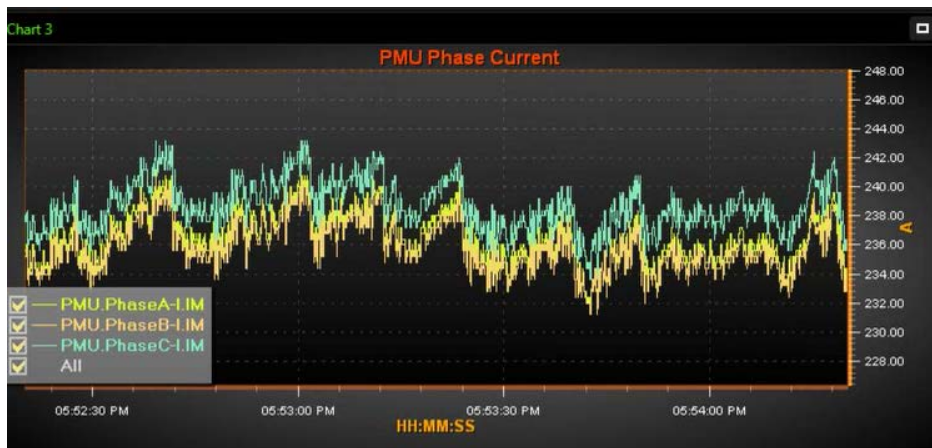
## **Using Synchrophasor Data to Monitor Reactive Power Balancing**

- (Cassiadoro -TRS, SCE –A.J, Peak RC –Zhang, Vaiman –V&R Energy)
- No significant progress to date

**Other topics we should address?**

# Video Event Files

**Objective** – Continue building library of events to demonstrate value PMU data provides when analyzing abnormal events and disturbances.



## Video

PMU versus SCADA Video Events [Summary](#). Please refer to EPG's [template](#) and the [Synchrophasor Data File Format .CSV](#) when creating a video event.

Video 1 - Current and voltage oscillations observed on the 138 kV system during testing of new generator controls (65 MW gas turbine).

[RTDMS PMU vs. SCADA Video 1](#)

Video 2 - Voltage oscillations observed on the 230 kV system when a water pump was taken offline.

[RTDMS PMU vs. SCADA Video 2](#)

Video 3 - Voltage oscillations observed following the loss of a 345 kV line during a period of high wind generation.

[RTDMS PMU vs. SCADA Video 3](#)

Video 4 - Real and Reactive Power oscillations observed on the 69 kV system during a period of high wind generation with the plant radially connected (i.e. one of two normal source lines out of service).

[RTDMS PMU vs. SCADA Video 4](#)

Video 5 - Real and Reactive Power oscillations observed during a period of high wind generation.

[RTDMS PMU vs. SCADA Video 5](#)

Video 6 - Real Power and voltage oscillations observed following the loss of a large generator.

[RTDMS PMU vs. SCADA Video 6](#)

Video 7 - Wind farm Oscillation Detection and Mitigation using Synchrophasor Technology

[Wind Farm Oscillation Detection and Mitigation](#)

Video 8 - A 230kV fault followed by a loss of a large generation plant caused system frequency to drop approximately 72mHz momentarily, while having an impact on nearby system voltages and online generators ( [Clip 1](#) , [Clip 2](#) , [Clip 3](#) )

[Video 9](#) - Please be patient with the download, the video is very large. This video captures the actual synchronization of a large generator to the electric grid. The windows in the visualization tool capture frequency, output power, voltage angle, and voltage magnitude of the generator and at a reference point on the electric grid.



# Use Case Documents

**Objective** – Develop docs that demonstrate ways that grid operators and electric utilities are using synchrophasor data to provide operational value.

Event ID	Event	Event Category	Entities Involved	Event Description	Extended Description in Related NASPI Technical Paper	Safety Impact	Reliability Impact	Budgetary Impact
TE02	Failing potential transformer	Transmission Equipment	ATC	Abnormal voltage signature found while reviewing PMU data led to discovery of a failing potential transformer which was subsequently isolated and replaced.	p.38	The utility avoided safety risk to personnel that might have been in close proximity to the PT during its failure.		Utility avoided costs associated with customer minutes of interruption that would have resulted from the potential transformer's failure had the condition not been identified and a mobile transformer placed in service to facilitate the outages necessary for its replacement.
TE03	Loose connections in potential circuits	Transmission Equipment	OG&E	Fluctuations observed in positive sequence voltage data collected from PMUs led to discovery of a loose fuse connection in a CCVT safety switch. PMU data has been used in a similar fashion to reveal faulty terminations, animal-damaged conductor and contact corrosion.	p.40			Utility avoided costs associated with equipment damage and customer minutes of interruption that might have resulted had the issues not been addressed.

# CRSTT – Primary Contacts

Name: Michael Cassiadoro

Email: [mcassiadoro@totalreliabilitysolutions.com](mailto:mcassiadoro@totalreliabilitysolutions.com)

Phone: 360-836-9008

Name: Jim Kleitsch

Email: [jkleitsch@atcllc.com](mailto:jkleitsch@atcllc.com)

Phone: 608-877-8102

**Next NASPI CRSTT Conference Call: July 18, 2018.**

**Next NASPI WG Meeting: October 2018 in Philadelphia**